

## REMARKS

In response to the Office Action mailed July 25, 2003, Applicants respectfully request reconsideration in view of the above amendments and the following remarks.

### Rejections Under 35 U.S.C. 112, second paragraph

Claims 5 and 12 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 5 and 12 have been cancelled.

### Rejections Under 35 U.S.C 102

Claims 1-3, 5-6 and 9-13 were rejected under 35 U.S.C. §102(b) as being anticipated by Stankiewicz. Applicants respectfully traverse this rejection because it is respectfully submitted that Stankiewicz does not teach the use of a solution containing a plurality of carbon aerogel precursors, but rather discloses the use of a carbonaceous resin which is not the same. Also, the "curing step" of Stankiewicz is not the same as the "gelling step" disclosed by Applicants, but rather a procedure used to solidify a resin as opposed to a procedure used to solidify a solution of carbon aerogel precursors.

In the July 25, 2003 office action, the examiner stated that, "Stankiewicz teaches a method for producing vitreous carbon foam, wherein a preformed polyurethane open cell foam is impregnated with a liquid carbonaceous resin...The liquid is then cured, or gelled and dried by evaporation, and subsequently pyrolyzed to form a vitreous, or

glassy, carbon composed of the two organic materials. No difference is seen between the process or material of Stankiewicz and that of the instantly claimed invention."

Applicants respectfully submit that Applicants' independent claim 1 differs from the process disclosed in Stankiewicz. Specifically, Stankiewicz does not teach the use of a solution containing a plurality of carbon aerogel precursors as recited in Applicants' claim 1. Claim 1, recites, "[a] method comprising: infiltrating a solution containing a plurality of carbon aerogel precursors into a pre-formed polymer foam, or fiber-mat...to form a monolithic glassy carbon material." Stankiewicz discloses the use of a carbonaceous resin not a solution containing a plurality of carbon aerogel precursors. A resin is defined by Hawley's Condensed Chemical Dictionary as "a semisolid or solid complex amorphous mix of organic compounds, whereas a solution is defined as "a uniformly dispersed mixture at the molecular or ionic level, of one or more substances (the solute) in one or more other substances (the solvent)." (See Hawley's Condensed Chemical Dictionary, 14<sup>th</sup> Edition, 2001.)

Therefore, the subject matter of Applicants' claims is not substantially disclosed or described in Stankiewicz and Applicants respectfully submit that independent claim 1 is allowable over the cited reference. Since claim 6 ultimately depends on claim 1, Applicants respectfully suggest that claim 6 is also allowable over the cited reference.

#### Rejections Under 35 U.S.C. 103

Claims 4, 7-8, and 14-16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Stankiewicz. Claims 14-16 have been cancelled. Applicants

respectfully traverse these rejections because the cited reference does not teach all of the claim limitations (i.e., “gelling at a temperature of 80°C and drying by evaporation in the temperature range of 20°C to 80°C”) and there is no suggestion in the reference to form a proper modification.

Under MPEP §2142, there are three requirements to establish a *prima facie* case of obviousness.

- 1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings.
- 2) There must be a reasonable expectation of success.
- 3) The prior art reference (or references when combined) must teach or suggest all the claim limitations.

It should be noted that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

First, Applicants respectfully suggest that the rejection fails under prong 3 of the obviousness test in that the reference does not teach or suggest all the claim limitations. Claim 4 recites “[w]herein allowing said solution containing a plurality of carbon aerogel precursors to gel is carried out at a temperature of 80°C and a time period of 110 minutes.” The Applicants respectfully submit that Stankiewicz does not disclose gelling at a temperature of 80°C. Applicants maintain that “curing of a resin” and “gelling of a solution containing a plurality of carbon aerogel precursors” are different as discussed above. In addition, Stankiewicz states “[t]he piece was then heated at 0.1 degrees C per minute until 170 C. This second controlled ramp was necessary to allow for the complete thermal setting of the carbonaceous resin ...” (page 9, line 24-27 and page 10, line 1; page 11, lines 19-22). The carbonaceous resin of Stankiewicz is not cured at a temperature within the range of 50 °C and 90 °C for a period of between 1 and 15

hours as stated by the examiner, but rather only the first step of the curing process occurs at the above-mentioned temperature and time interval. A second step of heating to 170 °C over approximately 1000 minutes is necessary to complete the curing. Therefore, it is respectfully submitted that Stankiewicz does not disclose gelling at a temperature of 80°C for a period of 110 minutes as claimed by Applicants.

Claim 7 recites, “[w]herein the drying is carried out by evaporation in the temperature range of 20°C to 80°C and for a time period of 12 to 48 hours.” Stankiewicz does not disclose drying by evaporation. Furthermore, Stankiewicz discloses that “the wet, uncured piece [of resin] was placed in a retort...the retort was filled with nitrogen and was heated...,” which is completely different than the drying step, i.e., by evaporation in the temperature range of 20°C to 80°C, claimed by Applicants.

Second, Applicants respectfully submit that the rejection fails under prong 1 of the obviousness test because there is no suggestion or motivation in the prior art to modify Stankiewicz. Under MPEP §2143.01, “[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art.” *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Stankiewicz is concerned with a method of controlling the aspect ratio throughout the body of a reticulated open cell carbon foam during manufacturing by controlling the exothermic reaction of the resin system by placing the carbon foam in an inert atmosphere retort. In contrast, Applicants disclose a method wherein an organic gel precursor is infiltrated into a pre-formed organic polymer foam or fiber-mat and the mixture is allowed to gel. Applicants respectfully suggest that one of ordinary skill in the art would not find a motivation in the reference to properly modify a teaching of controlling the exothermic reaction of a resin system to meet the limitations of claims 4, 7 or 8.

New Claims 18 and 19

New claim 18 recites, “[w]herein said drying is carried out by supercritical carbon dioxide exchange.” Support for new claim 18 can be found in Applicants’ disclosure on page4, paragraph [0014], “[d]rying can also be carried out by...supercritical drying after fluid exchange with liquid carbon dioxide.” New claim 19 recites, “[a] composite material consisting essentially of: a matrix of porous carbon aerogel in intimate contact with a plurality of solid carbon struts or fibers.” Support for new claim 19 can be found in Applicants’ disclosure on pages 4-5, paragraph [0014] and in original claim 10. Stankiewicz does not disclose the use of supercritical carbon dioxide exchange, nor does Stankiewicz disclose a material comprising a matrix of porous carbon aerogel in intimate contact with solid carbon struts or fibers.

Therefore, Applicants respectfully submit that new claims 18 and 19 are allowable over the cited reference.

## CONCLUSION

Allowance of claims 1, 4, 7-8, and 18-19 is respectfully requested. The Applicants respectfully submit that no new matter has been introduced by these amendments and additions to the claims.

In the event that the Examiner finds any remaining impediment to the prompt allowance of these claims that could be resolved by a telephone conference, the Examiner is urged to contact the undersigned. In the unlikely event that the Patent Office determines that an extension and/or other relief is required as a result of this statement, applicants petition for any required relief including extensions of time and authorize the Assistant Commissioner to charge the cost of such petitions and/or other fees due to our Deposit Acct. No. 12-0695. However, the Assistant Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

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